

### REMARKS

Claim 6 has been amended to indicate that Applicants' claimed process involves a method for regenerating catalytic activity of a catalyst which is composed of a titanium dioxide or hydrous titanium dioxide support coated with gold particles that has been used for the oxidation of unsaturated hydrocarbons in the gas phase comprising contacting the catalyst with water, dilute acid or a dilute hydrogen peroxide solution. Support for this amendment is found on page 3, lines 14-18 of the specification.

Claim 8 has been amended to indicate that the activity of the catalyst is regenerated by contacting the catalyst with steam under pressure. Support for this amendment is found on page 3, lines 20-22 of the specification.

Claim 9 has been amended to indicate that the activity of the catalyst is regenerated by contacting the catalyst with an aqueous hydrogen peroxide solution having a concentration less than or equal to 10 wt.%, based on the total weight of the catalyst. Support for this amendment is found on page 3, lines 8-12 of the specification as well as on page 4, lines 7-8 of the specification.

Claim 11 has been amended to a "Jepson-type" claim. Support for this amendment is found on page 3, lines 8-12 of the specification.

Claim 12 has been amended to indicate that Applicants' claimed process involves regenerating catalytic activity of a catalyst which is composed of a titanium dioxide or hydrous titanium dioxide support coated with gold particles. Support for this amendment is found on page 3, lines 14-18 of the specification.

New Claim 13 is directed to the method of Claim 12 in which the activity of the catalyst is regenerated by contacting the catalyst with dilute acid having a pH of 5.5 to 6.0. Support for this amendment is found on page 4, lines 11-12 of the specification.

The Patent Office objected to Claims 6 and 12 for informal reasons. Additionally, the Patent Office rejected Claims 7-9 and 11 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as their invention. Also, the Patent

Mo-5845

-3-

Office rejected Claims 6-7 and 9-12 under 35 U.S.C. § 102(b) as being anticipated by United States Patent Number 5,859,265 ("Muller et al."). Additionally, the Patent Office rejected Claim 8 under 35 U.S.C. § 103(a) as being unpatentable over Muller et al. in view of United States Patent No. 6,031,116 ("Bowman et al."). These rejections are respectfully traversed.

Objection to Claim 6:

The Patent Office objected to Claim 6 for informal reasons. The Patent Office suggested that the words "... a catalyst composed of ..." be changed to "... a catalyst which is composed of ...". Applicants have amended Claim 6 as suggested by the Examiner.

Objection to Claim 12:

The Patent Office objected to Claim 12 for informal reasons. The Patent Office suggested that the words "... a catalyst composed of ..." be changed to "... a catalyst which is composed of ...". Applicants have amended Claim 12 as suggested by the Examiner.

Rejection of Claims 7-9 and 11 under 35 U.S.C. § 112, second paragraph:

Claims 7-9 and 11 stand rejected as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as their invention.

The Patent Office believes that the words "was produced" in Claim 7 make it unclear as to whether the production of the catalyst by a deposition-precipitation method is actually part of the regeneration process. Also, the Patent Office believes that the use of the words "deposition-precipitation" in Claim 7 make it unclear as to whether or not these words are used in the alternative. Applicants have cancelled Claim 7 from the Application. The rejection of Claim 7 under 35 U.S.C. § 112, second paragraph, is, therefore, moot.

The Patent Office also believes that Claims 7-9 and 11 recite use limitations of a catalyst product rather than positively reciting process steps for regenerating a catalyst. As mentioned above, Claim 7 has been cancelled from the Application. Applicants respectfully submit that Claims 8-9 and 11 are definite. However, in

order to move this Application to allowance, Applicants have amended Claims 8-9 and 11 to further describe a method for regenerating the activity of a catalyst.

Applicants believe that amended Claims 8-9 and 11 positively recite process steps for regenerating catalytic activity according to the method of their claimed invention. Applicants therefore believe that Claims 8-9 and 11 particularly point out and distinctly claim the subject matter which they regard as their invention. Thus, Applicants respectfully request that the Patent Office withdraw its rejection of Claims 8-9 and 11 under 35 U.S.C. § 112, second paragraph, and enter allowance of these Claims.

Rejection of Claims 6-7 and 9-12 under 35 U.S.C. § 102(b):

Claims 6-7 and 9-12 stand rejected as being anticipated by Muller et al. Regarding Claims 6 and 12, the Patent Office believes that Muller et al. disclose a method for regenerating a catalyst composed of titanium silicalite with a gold modifier comprising contacting the catalyst with a solution of hydrogen peroxide in mineral acid. Regarding Claim 7, the Patent Office believes that Muller et al. disclose chemical vapor deposition and making a white suspension reaction mixture from solution. Regarding Claim 9, the Patent Office believes that Muller et al. disclose a catalyst in contact with 0.196% hydrogen peroxide. Regarding Claim 10, the Patent Office believes that Muller et al. disclose a method for regenerating a catalyst composed of titanium silicalite with a gold modifier. Finally, regarding Claim 11, the Patent Office believes that Muller et al. disclose gas phase olefin epoxidation in the presence of hydrogen.

In order for a reference to anticipate, the claimed invention must be the same as that of the reference. See Glaverbel Societe Anonyme v. Northlake Marketing & Supply Inc., 45 F.3d 1550, 33 U.S.P.Q.2d 1496, 1498 (Fed. Cir. 1995). Any degree of physical difference, however slight, invalidates a claim of anticipation. See Ultradent Products Inc. v. Life-Like Cosmetics Inc., 39 U.S.P.Q. 2d 1969, 1980 (Utah 1996). Applicants' claimed invention is not anticipated by Muller et al. because the catalyst claimed in Applicants' invention is different than the catalyst described in Muller et al.

In regard to Claims 6 and 9-11, Muller et al. disclose a catalyst which is composed of titanium or vanadium silicalite and one or more platinum metals. See Muller et al., column 1, lines 29-36. Muller et al. state that their catalyst may also contain gold. See column 2, lines 33-39. Applicants' claimed invention, on the other hand, describes a catalyst which is composed of titanium dioxide or hydrous titanium oxide and nanometer scale gold particles. See the Application, page 4, lines 2-4. Clearly, the catalyst described in Muller et al. is not the same catalyst which is disclosed in Applicants' claimed invention. Applicants' claimed invention, therefore, is not anticipated by Muller et al.

It is important to note that there is an "inherent mystery" surrounding the unpredictability of the performance of catalysts. See Mobil Oil Corp. v. W.R. Grace Co., 180 U.S.P.Q. 418 (1973). Additionally, catalytic action cannot be forecast by the chemical composition of a catalyst, for catalytic action is not understood and is not known except by actual test. See Corona Co. v. Dovan Corp., 276 U.S. 358 (1928); In re Doumani, 126 U.S.P.Q. 408 (1960). The Court of Customs and Patent Appeals held that a prior art patent which disclosed the use of more than thirty metals suitable for use as catalysts, including platinum and rhodium, did not render obvious applicants' claimed invention, which claimed rhodium for use as a catalyst, because the record did not indicate that there was a likelihood that platinum and rhodium are equivalent. See In re Doumani, 126 U.S.P.Q. 408 (1960).

The Patent Office has not provided any evidence to indicate that the catalyst described in Muller et al., which is composed of titanium or vanadium silicate and platinum metals and, possibly, gold, is equivalent to the catalyst disclosed in Applicants' claimed invention. Considering the foregoing, and due to the fact that catalytic effects are not ordinarily predictable, Applicants respectfully contend that the Patent Office has not shown that Applicants' claimed invention is anticipated by Muller et al.

In regard to Claim 12, Muller et al. disclose a catalyst which is composed of titanium or vanadium silicalite and one or more platinum metals. See Muller et al., column 1, lines 29-36. Muller et al. state that their catalyst may also contain gold.

See column 2, lines 33-39. Applicants' claimed invention, on the other hand, describes a catalyst which is composed of titanium dioxide or hydrous titanium oxide and nanometer scale gold particles. See the Application, page 4, lines 2-4. Clearly, the catalyst described in Muller et al. is not the same catalyst which is disclosed in Applicants' claimed invention. Applicants' claimed invention, therefore, is not anticipated by Muller et al.

Additionally, Muller et al. disclose that the activity of their catalyst can be regenerated by means of a solution of hydrogen peroxide in mineral acid. No where in Muller et al. is there a suggestion or teaching that the activity of a catalyst which is composed of titanium dioxide or hydrous titanium oxide and nanometer scale gold particles can be regenerated by contacting the catalyst with water or dilute acid. Considering the foregoing, and due to the fact that catalytic effects are not ordinarily predictable, Applicants respectfully contend that the Patent Office has not shown that Applicants' claimed invention as set forth in Claim 12 is anticipated by Muller et al.

The catalyst described in Muller et al. is not the same catalyst which is disclosed in Applicants' claimed invention. As a result, Applicants' claimed method for regenerating the activity of a catalyst which is composed of titanium dioxide or hydrous titanium oxide and nanometer scale gold particles is not anticipated by Muller et al., which discloses a method for regenerating the activity of a catalyst which is composed of titanium or vanadium silicalite and platinum metals. Thus, the Patent Office's rejection of Applicants' claimed invention in view of Muller et al. is not proper. Applicants, therefore, respectfully request that the Patent Office withdraw its rejection of Claims 6 and 9-12 under 35 U.S.C. § 102(b) and enter allowance of these Claims.

Rejection of Claim 8 under 35 U.S.C. § 103(a):

The Patent Office rejected Claim 8 under 35 U.S.C. § 103(a) as being unpatentable over Muller et al. in view of Bowman et al. The Patent Office believes that Bowman et al. disclose a catalytic regeneration process comprising a regeneration gas and water. The Patent Office thus concludes that it would have

been obvious to one having ordinary skill in the art to use the water of Bowan et al. with the regeneration of Muller et al.

In order to support a rejection based on obviousness, the prior art must provide a motivation or reason for the worker in the art, without the benefit of the Applicants' specification, to make the necessary changes in the referenced invention. See Ex parte Chicago Rawhide Manufacturing Co., 226 U.S.P.Q. 438 (PTO Bd. App. 1984).

As mentioned above, Muller et al. disclose a catalyst which is composed of titanium or vanadium silicalite and one or more platinum metals. See Muller et al., column 1, lines 29-36. Muller et al. state that their catalyst may also contain gold. See column 2, lines 33-39. Applicants' claimed invention, on the other hand, discloses a catalyst which is composed of titanium dioxide or hydrous titanium oxide and nanometer scale gold particles. See the Application, page 4, lines 2-4. Clearly, the catalyst described in Muller et al. is not the same catalyst which is disclosed in Applicants' claimed invention. Muller et al. do not provide any teaching or suggestion to change their catalyst to a catalyst which does not contain one or more platinum metals.

In order to "arrive at" Applicants' claimed invention, the skilled artisan would have had to ignore the fact that Muller et al. do not even teach or motivate the skilled artisan to change the catalyst being regenerated from a catalyst which is composed of titanium or vanadium silicalite and one or more platinum metals and, possibly, gold, to a catalyst which is composed of titanium dioxide or hydrous titanium dioxide and nanometer scale gold particles. Additionally, when making the necessary changes to the catalyst described in Muller et al., the skilled artisan would have had to ignore the fact that such changes would bring unpredictable chemical results, as it is well established that catalytic effects are not predictable.

Since there is no teaching in Muller et al. to change the catalyst disclosed therein, there therefore would have been no reason or motivation for one skilled in the art to change the catalyst disclosed in Muller et al. to a catalyst which is composed of titanium dioxide or hydrous titanium dioxide and nanometer scale gold


particles. Applicants contend that the Patent Office is incorrectly using their disclosure to piece together the prior art to render their claimed invention obvious. Since hindsight such as this is not allowed, the Patent Office cannot combine Muller et al. with Bowman et al. to render Applicants' claimed invention obvious. Applicants, therefore, respectfully submit that their claimed invention is not obvious over Muller et al. in view of Bowman et al. Thus, Applicants request that the Patent Office withdraw its rejection of Claim 8 under 35 U.S.C. § 103(a) and enter allowance of this Claim.

#### CONCLUSION

For the foregoing reasons, Applicants respectfully request: that Claim 7 be cancelled from the Application; that the amendment of Claims 6, 8-9 and 11-12 be entered; that new Claim 13 be added to the Application; that the objection to Claims 6 and 12 be withdrawn; that the rejection of Claims 8-9 and 11 under 35 U.S.C. § 112, second paragraph, be withdrawn; that the rejection of Claims 6 and 9-12 under 35 U.S.C. § 102(b) be withdrawn; that the rejection of Claim 8 under 35 U.S.C. § 103(a) be withdrawn; and that pending Claims 6 and 8-13 be allowed to issue as a U.S. patent.

Respectfully submitted,

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Mo-5845

-9-

**VERSION WITH MARKINGS TO SHOW CHANGES MADE****In the Claims:**

Claims 6, 8, 9, 11 and 12 have been amended as follows:

-6. (Twice Amended, Marked-Up) A method for regenerating catalytic activity of a catalyst which is composed of a titanium dioxide or hydrous titanium dioxide support coated with gold particles that has been used for the oxidation of unsaturated hydrocarbons in the gas phase comprising contacting the catalyst with water, dilute acid or a dilute hydrogen peroxide solution.

8. (Once Amended, Marked-Up) The method of Claim 6 in which the activity of the catalyst [being] is regenerated [is contacted] by contacting the catalyst with steam under pressure.

9. (Once Amended, Marked-Up) The method of Claim 6 in which the activity of the catalyst [being] is regenerated [is contacted] by contacting the catalyst with an aqueous hydrogen peroxide solution having a concentration less than or equal to 10 wt.%, based on the total weight of the catalyst.

11. (Once Amended, Marked-Up) In a [A] process for the oxidation of unsaturated hydrocarbons with molecular oxygen in the presence of hydrogen in the gas phase in the presence of a [the] regenerated catalyst, the improvement wherein the regenerated catalyst comprises the regenerated catalyst of Claim 10.

12. (Once Amended, Marked-Up) A method for regenerating catalytic activity of a catalyst which is composed of a titanium dioxide or hydrous titanium dioxide support coated with gold particles that has been used for the oxidation of unsaturated hydrocarbons in the gas phase comprising contacting the catalyst with water or dilute acid. --

As explicitly set forth in **37 C.F.R. Section 1.21(c)(1)(ii), last sentence**, a marked up version does not have to be supplied for an added claim or a cancelled claim as it is sufficient to state that a particular claim has been added, or cancelled, and this has been so stated in the Amendment.

In particular, in this case, Claim 7 has been cancelled from the Application, while Claim 13 has been added to the Application.

Mo-5845

-10-